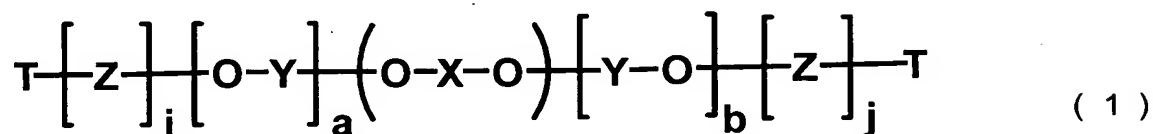


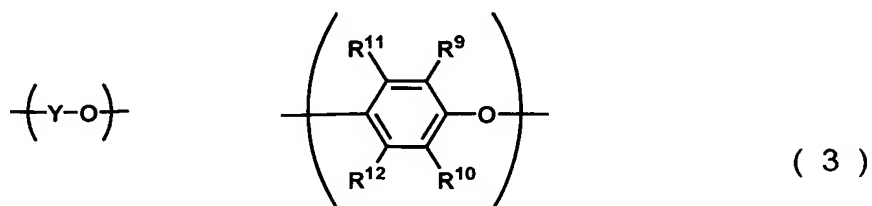
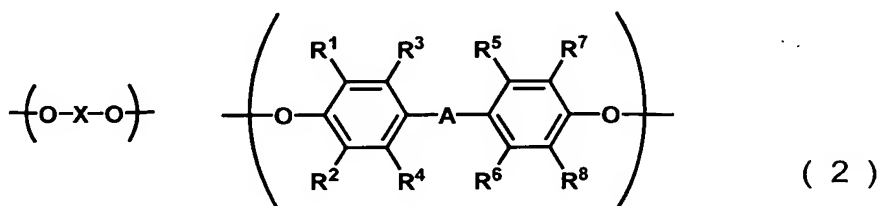
CLAIMS

1. A curable resin composition comprising:

a component (A) which is a polyphenylene ether oligomer having a number average molecular weight Mn of 700 to 4,000, having a vinyl group on each terminal, and represented by the formula (1):



wherein: Z represents an organic group which has one or more kinds of carbon atoms and which may have an oxygen atom; T represents a vinyl group; a and b each represent an integer of 0 to 20 and at least one of a and b is not 0; i and j each independently represent an integer of 0 or 1; -(O-X-O)- is represented by the formula (2); and -(Y-O)- represents one or more structures represented by the formula (3):



wherein: A represents a single bond or a linear, branched, or cyclic hydrocarbon group having 20 or less carbon atoms; R¹, R², R⁷, R⁸, R⁹, and R¹⁰ each independently represent a halogen atom, an alkyl group having 6 or less carbon atoms, or a phenyl group; and R³, R⁴, R⁵, R⁶, R¹¹, and R¹² each independently represent a hydrogen atom, a halogen atom, an alkyl group having 6 or less carbon atoms, or a phenyl group; and

a component (B) which is a solvent-soluble polyfunctional vinyl aromatic copolymer having structural units derived from monomers each formed of a divinyl aromatic compound (a) and an ethylvinyl aromatic compound (b), having a repeating unit derived from the divinyl aromatic compound (a) of 20 mol% or more, having a mole fraction of structural units having a vinyl group derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

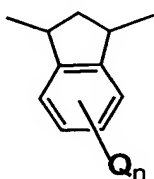


wherein: R¹³ represents an aromatic hydrocarbon group having 6 to 30 carbon atoms; and R¹⁴ represents an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the expression (a1)/[(a1)+(a2)] ≥ 0.5, having a number average molecular weight (M_n) measured through gel permeation chromatography (GPC) of 600 to 30,000 calculated by standard polystyrene samples

with narrow molecular weight distribution, and having a ratio (M_w/M_n) of a weight average molecular weight (M_w) and the number average molecular weight (M_n) of 20.0 or less, the curable resin composition being characterized in that:

a mixing amount of the component (A) is 20 to 98 wt% with respect to a total amount of the component (A) and the component (B).

2. A curable resin composition according to claim 1, characterized in that the component (B) comprises a soluble polyfunctional vinyl aromatic copolymer having an indan structure represented by the following general formula (4) in a main chain skeleton of the polyfunctional vinyl aromatic copolymer:



(4)

wherein: Q represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring; and n represents an integer of 0 to 4.

3. A curable resin composition according to claim 1 or 2, characterized in that the component (B) comprises a soluble polyfunctional vinyl aromatic copolymer having a structural unit derived from a monovinyl aromatic compound (c) except the ethylvinyl aromatic compound (b) in the polyfunctional vinyl aromatic copolymer.

4. A curable resin composition according to any one of claims 1 to 3, further comprising a component (C) which is a thermoplastic resin in addition to the component (A) and the component (B), wherein a mixing amount of the component (C) is 2 to 60 wt% with respect to a total amount of the component (A), the component (B), and the component (C).

5. A curable resin composition according to claim 4, wherein the thermoplastic resin as the component (C) comprises one or more kinds of thermoplastic resins selected from the group consisting of a block copolymer having a polymer segment with a glass transition temperature of 20°C or lower, and polyphenylene ether.

6. A curable resin composition according to claim 4 or 5, further comprising a component (D) which is a thermosetting resin in addition to the component (A), the component (B), and the component (C), wherein a mixing amount of the component (D) is 2 to 40 wt% with respect to a total amount of the component (A), the component (B), the component (C), and the component (D).

7. A curable resin composition according to claim 6, wherein the thermosetting resin as the component (D) comprises one or more kinds of thermosetting resins selected from the group consisting of thermosetting polyphenylene ether, a polyphenylene ether oligomer having a functional group on each terminal different from the functional group of the component (A), and a polyfunctional epoxy compound.

8. A curable resin composition according to claim 6 or 7, further comprising a component (E) which is a filler in addition to the component (A), the component (B), the component (C), and the component (D), wherein a mixing amount of the component (E) is 2 to 90 wt% with respect to a total amount of the component (A), the component (B), the component (C), the component (D), and the component (E).

9. A curable resin composition according to any one of claims 1 to 8, characterized by further comprising a component (J) which is a layered silicate, wherein a mixing amount of the component (J) is 0.1 to 98 wt%.

10. A curable resin composition according to claim 9, wherein the component (J) comprises a swelling layered silicate having affinity to an organic solvent.

11. A flame retardant curable resin composition, characterized by comprising a component (J) which is a layered silicate and a component (K) which is a halogenated flame retardant in the curable resin composition according to any one of claims 1 to 8, wherein: a mixing amount of the component (J) is 0.1 to 95.9 wt%; and a mixing amount of the component (K) is 0.1 to 95.9 wt%.

12. A flame retardant curable resin composition according to claim 11, wherein:

the component (J) comprises at least one layered silicate selected from the

group consisting of montmorillonite, swelling mica, and hectorite; and

the component (K) comprises one or more kinds of halogenated flame retardants selected from the group consisting of decabromodiphenyl oxide, octabromodiphenyl oxide, tetrabromodiphenyl oxide, ethane-1,2-bis(pentabromophenyl), bis(2,4,6-tribromophenoxy)ethane, ethylenebistetrahydrophthalimide, polydibromophenylene oxide, tetrabromobisphenol-S, 1,1-sulfonyl[3,5-dibromo-4-(2,3-dibromopropoxy)]benzene, tris(2,3-dibromopropyl-1)isocyanurate, tris(tribromophenyl)cyanurate, a brominated polystyrene having an atactic structure, a brominated styrene-methyl methacrylate-based copolymer having an atactic structure, a brominated styrene-methyl methacrylate-diglycidyl methacrylate-based copolymer having an atactic structure, a brominated styrene-glycidyl methacrylate-based copolymer having an atactic structure, a brominated styrene-polypropylene-based copolymer having an atactic structure, a brominated polyethylene, tetrabromobisphenol-A, a tetrabromobisphenyl-A-epoxy oligomer, a brominated epoxy compound, a tetrabromobisphenol-A-carbonate oligomer, tetrabromobisphenol-A-bis(2-hydroxydiethyl ether), tetrabromobisphenol-A-bis(2,3-dibromopropyl ether), poly(pentabromobenzyl acrylate), and octabromotrimethylphenylindane.

13. A curable resin composition according to claim 11 or 12, characterized in that the component (J) has an average interlayer distance of a (001) plane of 3 nm or more measured through a wide angle X-ray diffraction measurement method, and is partly or entirely dispersed in five or less layers.

14. A film which is obtained by forming the curable resin composition according to any one of claims 1 to 13 into a film.

15. A curable composite material comprising the curable resin composition according to any one of claims 1 to 13 and a substrate, characterized in that the substrate is included in a ratio of 5 to 90 wt%.

16. A cured composite material which is obtained by curing the curable composite material according to claim 15.

17. A laminate characterized by comprising a layer of the cured composite material according to claim 15 and a metal foil layer.

18. A resin coated metal foil characterized by comprising a film formed of the curable resin composition according to any one of claims 1 to 13 on one side of a metal foil.